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23 MAY 1963

MEMORANDUM FOR : Director, National Reconnaissance Office
SUBJECT : Improving the U-2 Photographic Capability
REFERENCE : Memorandum for The Director, NRO Program B
from Director, National Reconnaissance
Office, dated 16 May 1963, subject:
Improving the U-2 Photographic Capability

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1. The exchange of memorandums on this subject seems to be adding to the problem rather than contributing to a solution. The intent and interpretation of the numerous statements made seem to indicate a need to restate the intentions of the proposed program.

2. Dr. Land has expressed concern over the possibility of our U-2 missions in Cuba being of lower resolution than that required for the intelligence community to make a continuing appraisal of the situation. This is especially true when you consider the potential denial of low level reconnaissance missions over specific objectives. Add in then our requirement for continuous overall surveillance and the possibility of covert construction of previously unknown launch sites and the argument for an immediate, improved capability of technical intelligence quality photo coverage from the U-2 becomes extremely important.

3. Our first thought was to improve the existing Hycon "B" Camera by use of fine grain SO-130 type film. Additional tests of this combination are planned with film due for delivery the end of this week. During the summer months, when sun angles are high, we feel we can use SO-130 with the existing shutter. Tests of a two-speed shutter last fall led to the conclusion that vehicle performance degraded photography at the slow speed with SO-130 film. The limited tests to date indicate an improved sharpness and clarity of photos with SO-130 in the "B" Camera, but no specific figure has been applied for the improvement. About all we can say,

NRO review(s)

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at the moment, is that from available data, the "B" Camera with SO-130 at sun angles of about 80° gives a quality equal to the Eastman OXCART Camera tests in the U-2. Vehicle parameters degrade the Eastman Kodak OXCART product in the U-2. The best frames of photography from either of the above cases are better than the "B" Camera with 8402 film.

4. A solicited proposal was received from Itek some time ago for fitting a CORONA triple prime camera (Instrument #51) into the U-2 for suitability testing of this type of panoramic camera in an aircraft. Since this camera was designed for satellite reconnaissance, we would like to verify its behavior in an aircraft in a single installation prior to committing ourselves to a stereo configuration similar to MURAL. The single CORONA camera will fit in the U-2 with minor modifications and can be flown in less than two months. Itek estimated less than for the modification, test and checkout. The theoretical resolution of the C111 at U-2 operational altitudes is 13.4" on the ground with SO-206 and 13.0" with SO-132. While the single installation would not give true stereo, considerable redundancy in overlap is available. Also, once the capability has been demonstrated, interpolation to stereo convergent advantages could be made from existing MURAL photography. We can certainly find out the capability of such a system quickly and cheaply with this approach. Then we will compare this product to the Hycon 48" and the Eastman 18" or 24" as a long range product improvement program. Meanwhile, we might very well have a reconnaissance tool in the C111 single installation to be of significant benefit this summer in the Cuban operation.

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5. In summary, I feel we have two distinct problems. One is in the nature of a "quick-fix"; the other is a long range product improvement. I am proposing to initiate the "quick-fix" approach as soon as possible. Important lead time has already passed due to failure to implement an obvious prudent course of action. An early favorable consideration of this matter will be greatly appreciated. Meanwhile, additional time is required to look into the long range problem of a possible second generation camera for U-2's.

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6. A copy of the Itek proposal for reconfiguration of the C111 is enclosed for your information and retention.

[REDACTED]
HERBERT SCOVILLE, JR.
Deputy Director
(Research)

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Att: Itek Proposal

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Signature Recommended:

[REDACTED]
JACK C. LEDFORD
COLONEL, USAF
Assistant Director
(Special Activities)

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[REDACTED]:DD/OSA:hmj (21 May 1963)

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